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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,272	07/24/2006	Rolf Berge	966917.00012	6396

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DOBE LAW GROUP, LLC
7207 HANOVER PARKWAY
SUITE C/D
GREENBELT, MD 20770

EXAMINER	
ARIANI, KADE	

ART UNIT	PAPER NUMBER
1651	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,272	BERGE, ROLF	
	Examiner	Art Unit	
	KADE ARIANI	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17,21-25,34 and 42-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,21-25,34 and 42-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The amendment filed on July 21, 2009, has been received.

New claims 42-50 have been added.

Claims 17, 21-25, 34, and 42-50 are pending in this application and were examined on their merits.

Applicant's arguments filed on 07/21/2009 with respect to claims 17, 21-25, 34, and 42-50 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The rejection of claims 17, 21-25, 34 under 35 U.S.C. 112, first paragraph, is withdrawn due to applicant amendments to the claims filed on 07/21/2009.

Claims 42-46 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of treating fatty liver,

hypercholesterolemia, or hyperhomocysteinemia by lowering plasma cholesterol level, lowering the concentration of plasma homocysteine, and lowering the levels of hepatic triacylglycerols, does not reasonably provide enablement for a method of preventing fatty liver, preventing hypercholesterolemia, or preventing hyperhomocysteinemia. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims and have possession for the entire scope of these claims.

Factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have been described by the court *in In re Wands*, 8 USPQd 1400 (CA FC 1988). Wands states at page 1404,

> "Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized by the board in Ex parte Forman. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims."

The nature of the invention

The claims are drawn to a method of preventing fatty liver, hypercholesterolemia, or hyperhomocysteinemia. The invention is in a class of invention, which CAFC has characterized as “the unpredictable arts such as chemistry and biology.” Micogen Plant Sci., Inc. v. Monsanto Co., 243 F.3d 1316, 1330 (Fed Cir. 2001).

The breadth of the claims

The claims broadly encompass preventing all cases of fatty liver, hypercholesterolemia and hyperhomocysteinemia by administering a composition comprising an enzyme treated FPH material.

Quantity of Experimentation

The quantity of experimentation in this area is extremely large due to the variation between individuals, independent risk factors, and underlying cause of each condition. This would require years of inventive effort, with each of the many inventing steps, not providing any guarantee of success in the succeeding steps.

The unpredictability of the art and the state of the prior art

The art is unpredictable with regard to preventing fatty liver, hypercholesterolemia, and hyperhomocysteinemia.

Bergeron et al. (Journal of Nutrition, 1992, vol. 122, p.1731-1737) teach fish protein can produce variable effects on serum total cholesterol concentrations, it can be hypercholesterolemic (increase cholesterol) depending on the amount and the origin of dietary lipid (p.1731 1st column 2nd paragraph 8-12).

Van Guldener et al. teach the most prevalent known causes of hyperhomocysteinemia are genetic defects, renal failure, etc. Elimination of the underlying cause is not always feasible (p.1451 2nd column 2nd and 3rd paragraphs).

Bobe et al. (J Dairy Sci. 2004, Vol. 87, p.3105-3124) teach fatty liver is categorized into fatty liver are normal or mild and moderate or severe fatty liver, and the latter can be subdivided into nonencephalopathic severe fatty liver and hepatic

encephalopathy (Abstract lines 14-18). Bobe et al. teach the presence of independent risk factors besides the nutritional and health status for fatty liver (p.3114 21st column 3rd paragraph lines 2-8). Bobe et al. teach to prevent fatty liver are to counter act oxidative or cytotoxic damage to liver, bacterial endotoxemia, and ruminal acidosis and to improve metabolic state of the domestic animals/cows (p.3115 1st column 3rd paragraph). Bobe et al. further teach the scarcity of studies that have determined the efficacy of treatments for mild and moderate fatty liver (p.3117 2nd column 4th paragraph).

Working examples

In the specification, the working examples are only drawn to lowering plasma cholesterol level, lowering the concentration of plasma homocysteine, and lowering the levels of hepatic triacylglycerols in Zucker rats.

Guidance in the Specification

The specification does teach how this method can be used for preventing all cases of fatty liver, hypercholesterolemia and hyperhomocysteinemia in an animal in need.

Level of Skill in the Art

The level of skill in the art is deemed to be high.

Conclusion

Thus given the broad claims, the unpredictability of that art, the large quantity of research required to define these unpredictable variables, the lack of guidance provided in the specification, the working examples, and the negative teachings of the art, it is the position of the examiner that it would require undue experimentation for one of skill in the art to perform the method of the claim as broadly written and the instant application does not support the breadth of the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The rejection of claims 17, 21-25 and 34 under 35 U.S.C. 103(a) as being unpatentable over Aoyama et al. (Biosci Biotechnol. Biochem., 2000, Vol. 64, No.12, p.2594 -2600) in view of Nielson (US 2002/0182290 A1) and further in view of Bergeron et al. (Journal of Nutrition, 1992, vol. 122, p.1731-1737) and further in view of Liceaga-Gesualdo et al. (Journal of Food Science, 1999, Vol. 64, No.6, p.1000-1004) and further in view of Van Guldener & Stehouwer (Expert Opin. Pharmacother. 2001, Vol. 2, No. 9, p.1449-1460) and further in view of Cahu et al. (Aquaculture, 2001, Vol. 200, p.161-180), is withdrawn due to applicant's amendments to the claims.

Claims 17, 21-25, 34, and 42-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama et al. (Biosci Biotechnol. Biochem., 2000, Vol. 64, No.12, p.2594 -2600) in view of Liaset et al. (Process Biochemistry, 2002, Vol. 37, p.1263-1269) and further in view of Bergeron et al. (Journal of Nutrition, 1992, vol. 122, p.1731-1737) and Kristinsson et al. (Critical Reviews in Food Science and Nutrition, 2000, Vol. 40, No.1, p.43-81) and Van Guldener & Stehouwer (Expert Opin. Pharmacother. 2001, Vol. 2, No. 9, p.1449-1460) and Cahu et al. (Aquaculture, 2001, Vol. 200, p.161-180).

Claims 17, 21-25, 34, and 47-50 are drawn to a method of treating fatty liver, hypercholesterolemia, or hyperhomocysteinemia, comprising administering to an animal in need of such treatment, a pharmaceutical (or nutritional) composition comprising an enzyme treated fish protein hydrolysate (FPH) material, wherein the animal is human, the animal is an agricultural animal, the animal is a domestic animal, the animal is a fish, the nutritional composition is a food grade product, and the fish protein hydrolysate material is fish flesh remnants on fish bone frames after filleting, the FPH material is obtained by enzymatic hydrolysis with a Bacillus protease complex, the FPH is obtained by a process comprising enzymatic treatment of fish material to obtain a hydrolysate, filtration of the hydrolysate, and spray drying of ultra-membrane filtered fraction of the hydrolysate, the fish protein hydrolysate material comprises about 83% protein, 10% ash, and about 2% lipids, based on dry weight, wherein the fish protein hydrolysate material has an amino acid composition comprising about 59.4 grams arginine, 39 grams histidine. 27.5 grams isoleucine, 56.4 grams leucine, 63.7 grams lysine, 22 grams methionine, 26.9 grams phenylalanine, 39 grams threonine, 5.3 grams

tryptophan, 35.5 grams valine, 74 grams alanine, 73 grams of combined asparagine and aspartate, 6.1 grams of total cysteine, 116 grams of combined glutamine and glutamate, 89 grams glycine. 20.7 grams hydroxy-proline, 47 grams proline, 37 grams serine, 21 grams tyrosine and 6.2 grams taurine, wherein said gram quantities of each amino acid are present as approximate amounts per kilogram of crude protein.

Claims 42-46 are drawn to a method of preventing fatty liver, hypercholesterolemia, or hyperhomocysteinemia, comprising administering to an animal in need of such treatment, a pharmaceutical (or nutritional) composition comprising an enzyme treated fish protein hydrolysate (FPH) material (for lowering the concentration of plasma cholesterol, homocysteine and hepatic triacyglycerols).

Aoyama et al. teach a method of treating hypercholesterolemia comprising administering to an animal in need of such treatment (obese mice), a nutritional composition comprising an enzyme treated protein hydrolysate (milk whey and soy protein hydrolysate) (Abstract, p.2595 Table 1. 1st column 4th and 6th rows). Aoyama et al. teach the plasma cholesterol-lowering effect was more marked in the peptide than in the protein (p.2594 2nd column 2nd paragraph lines 7-9). Aoyama et al. teach in general amino acid mixtures simulating animal proteins induce a similar degree of hypercholesterolemia (p.2598 2nd column 2nd paragraph). Aoyama et al. also teach a peptide (obtained from a globin digest) suppressed elevation of the serum triglycerides level (p.2598 2nd column 3rd paragraph).

Aoyama et al. do not teach an enzyme treated fish protein hydrolysate (FPH), the FPH material is obtained by enzymatic hydrolysis with a Bacillus protease complex, the

fish protein hydrolysate material is fish flesh remnants on fish bone frames after filleting, the FPH is obtained by a process comprising enzymatic treatment of fish material to obtain a hydrolysate, filtration of the hydrolysate, and spray drying of ultra-membrane filtered fraction of the hydrolysate, the fish protein hydrolysate material comprises about 10% ash based on dry weight, wherein the fish protein hydrolysate material has an amino acid composition comprising about 59.4 grams arginine, 39 grams histidine. 27.5 grams isoleucine, 56.4 grams leucine, 63.7 grams lysine, 22 grams methionine, 26.9 grams phenylalanine, 39 grams threonine, 5.3 grams tryptophan, 35.5 grams valine, 74 grams alanine, 73 grams of combined asparagine and aspartate, 6.1 grams of total cysteine, 116 grams of combined glutamine and glutamate, 89 grams glycine. 20.7 grams hydroxy-proline, 47 grams proline, 37 grams serine, 21 grams tyrosine and 6.2 grams taurine, wherein said gram quantities of each amino acid are present as approximate amounts per kilogram of crude protein, agricultural animal, and fish. However, Liaset et al. teach a FPH, wherein the fish protein hydrolysate material is fish flesh remnants on fish bone frames after filleting (Atlantic salmon frames from filleting), the FPH is obtained by a process comprising enzymatic hydrolysis with a Bacillus protease complex (Protamex), and filtration of the hydrolysate (Abstract and p.1264 1st column 2nd paragraph line 1-2, 3rd paragraph, and p. 1264 2nd column 1st paragraph lines 13-15). It must be noted that although, Liaset et al. is silent about the percentages of protein, ash, and lipids of the fish protein hydrolysate material and its amino acid composition, however Liaset et al. FPH material appears to be the same as the claimed enzyme treated FPH material and is produced by identical or substantially identical

processes, therefore it must inherently possess the claimed percentages of protein, ash, lipids and gram quantities of each amino acid.

Moreover, Bergeron et al. teach lowering the concentration of plasma cholesterol and hepatic triacyglycerols by administering a nutritional composition comprising fish protein to an animal (rabbit) (p.1731 1st column Abstract, 2nd paragraph lines 6-8, p. 1734 2nd column 2nd paragraph lines 1-3). Bergeron et al. further teach dietary proteins exerted a synergistic action with lipids in the regulation of hepatic cholesterol concentrations (p.1734 2nd column 2nd paragraph).

Kristinsson et al. teach ultrafiltration and spray drying of FPH (p.57 1st column 1st paragraph lines 9-11). Kristinsson et al. teach enzymatically hydrolyzing fish proteins modify and improve their functional properties which is particularly important if they are used as ingredients in food products (p.64 2nd column last paragraph lines 2-3 and 2nd column 1st paragraph lines 1-4).

Van Guldener et al. teach reducing plasma homocysteine concentration through dietary means, methionine restriction with or without cystine supplementation. Van Guldener et al. teach the only source of homocysteine in humans is methionine, which can be derived from the diet or from breakdown of endogenous proteins (p.1450 2nd column 2nd paragraph). Van Guldener et al. further teach fish oil is one of the drugs that have been tested in order to reduce plasma homocysteine concentration (p.1451 1st column 3rd paragraph, and Table 1. 1st column 9th row).

Further motivation to administer fish protein hydrolysates to fish is in Cahu et al. who teach growth of salmon fry was enhanced by replacing the amino acid in a fish

meal based diet by fish protein hydrolysate. Cahu et al. teach incorporating di- and tri-peptides (obtained from fish meal hydrolysate) in the diet resulted in an improvement of the main biological parameters, growth, survival, and skeletal formation (p.175 4th and 5th paragraphs).

Therefore, in view of the above teachings, a person of ordinary skill in the art at the time the invention was made, recognizing that dietary fish protein lowers plasma cholesterol and hepatic triacyglycerols and that enzymatically hydrolyzing fish proteins modify and improve their functional properties, would have been motivated to modify the method as taught by Aoyama et al. by administering a composition comprising an a fish protein hydrolysate material obtained by enzymatic hydrolysis with a Bacillus protease complex as taught by Liaset et al. in order to provide a method of treating fatty liver, hypercholesterolemia, with a reasonable expectation of success, because Bergeron et al. teach dietary fish protein lowers the concentration of plasma cholesterol and hepatic triacyglycerols.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kade Ariani whose telephone number is (571) 272-6083. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kade Ariani
Examiner
Art Unit 1651

/Leon B Lankford/
Primary Examiner, Art Unit 1651